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SURVIVAL FACTORS IN LABORATORY MICE
TRANSPORTED BY AIR TO REMOTE LABORATORIES

R. J. Brown, F. A. Hodge, P. L. Joseph, and R. Tirtarahardja



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June 1978

NAVAL AFROSPACE MEDICAL RESEARCH LABORATORY
PENSACOLA, FLORIDA

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SUMMARY PAGE

THE PROBLEM

To deliver high-quality laboratory animals with the lowest possible mortality to remote medical research laboratories by aircraft.

FINDINGS

Laboratory mice flown by C 130 Hercules aircraft had a lower mortality rate when they were rested for 80 hours between two one-day flights than when the journey was completed in two consecutive days.

ACKNOWLEDGMENT

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INTRODUCTION

The most satisfactory method of transporting the laboratory mice required to remote medical research laboratories is by aircraft; however, there are variables that affect the survivability of animals in such an environment. This is a report of an experiment designed to evaluate one of the variables in the air transport of laboratory animals; i.e., mortality as related to periods of ground rest.

PROCEDURE

From 1972 to 1976, laboratory mice and other animals were transported on a routine basis once or twice a month to the Naval Medical Research Laboratories at Jakarta, Indonesia, by USAF-C130 Hercules aircraft, from the main research laboratories in Taipei, Taiwan. The usual number of mice transported each time was three hundred. The animals were loaded into the cargo space of the aircraft on a Monday and transported immediately to Clark AFB in the Philippines (a 3-hour flight) where the aircraft remained overnight. The laboratory mice remained in the C 130 cargo compartment during that time. By the time the aircraft landed and was parked, the ground and internal aircraft temperatures were within limits tolerable for the mice to survive overnight. The mice had adequate food and water throughout the flight and during the overnight ground rest.

On the following day, the mice were moved on to Jakarta, a flight of approximately 7 hours. With this procedure, over a period of 4 years, the average number of mice dead upon arrival at Jakarta was ten out of the three hundred shipped (3.3 deaths/100).

In the first week of February 1975, there were two scheduled C130 Hercules cargo planes scheduled from Clark AFB to go to Jakarta. These flights provided one of us (F. H.) with an unique opportunity to evaluate one of the aspects of air shipment of laboratory mice, i.e., mortality as related to ground rest. Consequently, the February shipment consisted of 900 mice that were off-loaded on Monday night at Clark to provide a 3 ½ day ground rest. They were subsequently shipped, by C130 Hercules aircraft, to Jakarta on the following Friday, some 80 hours later.

RESULTS AND DISCUSSION

Upon arrival of the experimental flight at noon in Jakarta, following the 7 hour trip, ten out of the total 900 mice were found dead (1.1 deaths/100). This is a three-fold decrease in mortality, apparently attributable to the 80-hour ground rest at Clark AFB, compared to that found after the usual 12-hour ground rest (3.3 deaths/100).

Obviously, tests evaluating effects of prolonged rest for the mice during air transport should be repeated several times to verify these findings. However, the cost of operation of a 120,000-pound aircraft over such a great distance during the present energy crisis precludes repeating this phase of the experiment. Consequently, the authors are presenting these admittedly meager data in the hope that other investigators might add their findings.

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